

**2024/FYUG/ODD/SEM/
BTCDDSC-201T/243**

FYUG Odd Semester Exam., 2024

**BIOTECHNOLOGY
(3rd Semester)**

Course No. : BTCDDSC-201T

(Genetics)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—I

- 1.** Answer any *two* from the following : 2×2=4
 - (a) Write a note on monohybrid cross.
 - (b) Write about test cross.
 - (c) Give a brief account on pleiotropy.

- 2.** Give an illustrated account of independent assortment. Add a note on law of segregation. 6+4=10

(2)

OR

3. Write notes on the following : 5+5=10
(a) Incomplete dominance
(b) Multiple allele

UNIT—II

4. Answer any two from the following : 2×2=4
(a) Define non-allelic interactions.
(b) Write a note on packaging of DNA molecule.
(c) Write about exons and introns.

5. Give an elaborate account of polytene chromosome. Add a note on lampbrush chromosome. 6+4=10

OR

6. Write notes on the following : 5+5=10
(a) Complementary genes
(b) Inhibitory genes

UNIT—III

7. Answer any two from the following : 2×2=4
(a) Write a brief note on Ames test for mutagenic agents.

J25/730

(Continued)

(3)

- (b) Give a brief description of trisomy-13.
(c) Write a note on Klinefelter's syndrome.

8. Define mutation. Describe various types of gene mutation. Add a note on causes of mutation. 1+5+4=10

OR

9. Give a detailed account of variations in chromosome structure with necessary diagrams. 10

UNIT—IV

10. Answer any two from the following : 2×2=4
(a) Define Barr bodies.
(b) What is dosage compensation?
(c) Write a note on genetic balance theory.

11. Give an elaborate account of mechanisms of sex determination. 10

OR

12. Write notes on the following : 5+5=10
(a) Fragile X syndrome
(b) Sex-linked inheritance

J25/730

(Turn Over)

(4)

UNIT—V

13. Answer any *two* from the following : $2 \times 2 = 4$

- (a) Differentiate between linkage and crossing over.
- (b) Write a note on cytological basis of crossing over.
- (c) Briefly explain genotype frequencies.

14. Describe molecular mechanism of crossing over. 10

OR

15. Discuss Hardy-Weinberg principle of equilibrium. Add a note on gene pool. $7 + 3 = 10$

★ ★ ★